Table 14 Summary of ML-based Admission Control

Ref.	ML Technique	Network	Dataset	Features	Output	Evaluation	
						Settings	Results
Hiramatsu [189, 190]	Supervised: NN	ATM	Simulation	· Link capacity ·Observed call generation rate	· Call loss rate	2-10-1[a]	Improved call loss rate
Cheng and Chang [95]	Supervised: MLP-NN	ATM	Simulation	· Congestion-status · Cell-loss probability · Peak bitrate · Average bitrate · Mean peak-rate duration	Acceptance or rejection	30-30-1[a]	20% system utilization improvement over [189]
Piamrat et al. [359]	Supervised: · RandNN	Wireless	Videos (distorted) generated by streaming application	Codec, bandwidth, loss, delay, and jitter	· MOS	N/A	N/A
Baldo et al. [36]	Supervised: · MLP-NN	Wireless LAN	ns-3 simulator and testbed	Link load and frame loss	Service quality	9-10-1[a]	98.5% (offline) 92% (online)
Liu et al. [281]	Supervised: · MLP-NN	Cellular (CDMA)	Simulation of cellular networks	· Network environment · User behavior · Call class · Action	GoS	5-10-1[a]	Performs better than the static algorithms
Bojovic et al. [66]	Supervised: · MLP-NN	Cellular (LTE)	ns-3 network simulator	· Application throughput · Average packet error rate · Average size of packet data unit	QoS fulfillment ratio	N/A	Accuracy: 86%
Vassis et al. [452]	Supervised: · MLP · Probabilistic RBFNN · LVQ-NN · HNN ·SVM network	Ad hoc networks	Pamvotis WLAN simulator	· Network throughput · Packet generation rate	Average packet delays	N/A	Correctness: ·77% - 88% (Probabilistic RBFNN) Others do not converge
Ahn et al. [8]	Un-Supervised: · HNN	Wireless network	Simulation	· Usable QoS levels	QoS assignment matrix for each connection	N × M, where N and M are the number of connections and the number of QoS levels	Minimized connection blocking and dropping probabilities
Blenk et al. [63]	Supervised: · RNN	VN	Simulation	· Different graph features	Acceptance or rejection of VN	18 different Recurrent NNs	89% - 98%
Bojovic et al. [67]	Supervised: · NN ·BN	Cellular (LTE) network	ns-3 simulator	· Channel quality indicator	R-factor	Two layers with Number of nodes in the hidden layer: 10 and 20	Accuracy: 98% (BN)
Quer et al. [372]	Supervised: · BN	Wireless LAN	ns-3 simulator	· Link Layer conditions	Voice call quality	Nodes: 9, Links: 14	Accuracy: 95%
Mignanti et al. [311]	RL: · Q-learning	NGN	OMNET simulator	States · Environment state based on number of active connections of each traffic class	Action · Accept or reject *(ϵ-greedy)*	Not provided	10%-30% better than a greedy approach
Wang et al. [458]	RL: · Q-learning	LTE femtocell networks	Simulation	States · Queue length of handoff and new calls	Action · Maintain, degrade, or upgrade proportion levels	RRl ×3, where l is QoS proportion levels	Reduction in blocking probability
Tong et al. [446]	RL: · Q-learning	Multimedia networks	Simulation	States · The number ongoing calls of each class · Call arrival or termination event · QoS and capacity constraints	Action · Accept or reject or no action	K × 2, where K is number of constraints	Improvement in rejection rates
Marbach et al. [295]	RL: · TD(0)	Integrated service networks	Simulation	States · The number active calls of each class · Routing path of each active call	Action · Accept with a route or reject	States 1.4×10^{256}	2.2% improvement in rewards